USEPA Comments on *Quality Assurance Project Plan, Surface Sediment Chemical Analyses and Benthic Invertebrate Toxicity and Bioaccumulation Testing, Draft,* September 16, 2009 (received September 29, 2009)

No.	Comment	Response	Discussion
General Comments			
1	The response to several comments was deferred to future memoranda. Consequently, EPA is not able to fully determine whether the 2009 benthic data will satisfy the final decision-making points and the needs of the risk assessments. In particular, the following responses/decisions were deferred to future memoranda and not satisfactorily addressed in the QAPP: ○ Response-to-Comments 4 and 31: explaining how the triad data will be evaluated. ○ Response-to-Comments 6 and 32: stating which historic datasets will be used to establish baseline conditions. ○ Response-to-Comments 15 and 59: integrating benthic data into the ecological risk assessment. ○ Response-to-Comments 18D and 19: evaluating benthic data for the human health risk assessment. ○ Response-to-Comment 26: evaluating Project Remedial Goals (PRGs). The proposed sampling program should be re-evaluated from the perspective of existing sample variability and acceptable remedial decision errors before the 2010 sampling program. The re-evaluation should focus on data requirements for the human health and ecological risk assessments and the remediation of polychlorodibenzodioxins/furans (PCDD/PCDF) and polychlorinated biphenyls (PCB). ○ Response-to-Comment 40: developing the regional background process to be used in the evaluation of the benthic toxicity results. ○ Response-to-Comment 41: methods for calculation and use of biota-sediment accumulation factors (BSAFs) for the risk assessment and development of site-specific concentration response models. ○ Response-to-Comment 47: justification for the proposed sampling plan to fulfill the data quality objectives.	Windward	CPG agrees to submit a schedule within 30 days from September 29, 2009 that outlines when the issues bulleted in Comment 1 will be addressed by memoranda. The following has been added to the QAPP in Section ES 5 of the Executive Summary and Worksheet 11, "Decision-making regarding the 2009 data interpretation will be documented in a series of memoranda prior to the start of the 2010 sampling effort and any changes to the field collection program as a result will be incorporated into a revised/amended QAPP."

No.	Comment	Response	Discussion
	○ Response-to-Comment 50: The CPG defers responding to this comment until submitting their proposed "Risk Analysis and Risk Characterization Plan." The unavailability of crucial project planning documents, such as the above referenced plan, raises a significant concern that the application of the data will be determined by what has been collected rather than what is the most optimal for meeting project objectives. The response to this comment also failed to provide the requested information on the purpose of subsequent sampling events and how the data would be utilized in the risk assessment. ○ Response-to-Comment 86: comparison of data quality levels that were presented in the Pathways Analysis Report (PAR) to those values in the QAPP. As such, EPA requires that the CPG submit, within 30 days of its receipt of these comments, a schedule outlining when it intends to address the issues outlined above. All of these issues must be addressed to EPA's satisfaction prior to the start of the spring 2010 sampling effort, and approval of the amended QAPP will be contingent upon EPA's approval of these issues. In addition, the current QAPP must state explicitly that these issues will be addressed prior to the start of the 2010 sampling effort and incorporated into a revised/amended QAPP.		

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2	The QAPP states that 27 of the sediment-triad sampling locations will be co-located with previously sampled mummichog and darter/killifish locations (Worksheet 11 on page 52, first bullet and Worksheet 14 on page 127). However, since most minnow traps were empty during the August-September fish sampling program, the forage fish dataset is incomplete. Consequently, the collection of co-located surface sediment during the benthic program to calculate BSAFs will not be useful. As was discussed during a conference call on September 11, 2009 between EPA and the CPG, a mummichog reconnaissance trip will be conducted at the start of the benthic QAPP-related sampling effort. This trip is currently scheduled for October 7, 2009, and members of EPA and the partner agencies will be present. As was discussed, if mummichog are observed during this trip, then EPA will request the deployment of a team to fill this data gap immediately, in which case sediment from the 27 mummichog-sampling locations can also be collected. However, if mummichog are not collected this fall, then collection of the co-located sediment must be deferred until the spring 2010 event. The collection of sediment from where the blue crab traps were placed, as is proposed in the QAPP, will not provide a forage fish bioaccumulation factor, and thus is not acceptable. Worksheets 11, 14, and 18 should be revised so that the 27 co-located mummichog and darter/killifish sediment samples are not pre-determined.	Windward	A footnote has been added to Table ES-2 and Worksheet 18 in the QAPP to state CPG will defer sampling at locations intended for co-location with mummichog collection until fish are caught. As discussed during the CPG-USEPA teleconference on October 1, mummichog are not gravid in the fall and the data need identified by USEPA on June 30, 2009 (see Worksheet 9 from the August 6. 2009 Fish/ Decapod Tissue QAPP) to collect eggs from mummichog could not be met if they were caught this fall. In addition, the collection of both fish and sediment samples during the Benthic QAPP maybe logistically infeasible. Note that three of the shallow near shore locations will be retained because they will be beneficial for the human health risk assessment (e.g., in the vicinity of a homeless camp or adjacent to Riverside County Park). Six locations are proposed for sampling where blue crab were caught in sufficient quantity to obtain a composite sample from an individual trap. One of the crab stations overlaps with a human health station and, therefore, the plan is to sample eight stations in the shallow near shore area during fall 2009 sampling.
3	In several worksheets, the QAPP prescribes criteria for the oversight split sample program, including number of split samples (Worksheet 10 on page 44, footnote 6), mass requirements (Worksheet 11 on page 50, top paragraph), and locations (Worksheet 18). In general, these criteria contradict the Oversight QAPP (Malcolm Pirnie, Inc., August 2009). While the CPG did provide an erratum to Worksheet 18 on September 25, 2009, which removed the prescribed split sampling locations, EPA requests that all prescriptive language regarding split samples be removed from the QAPP. Instead, the Oversight QAPP, which correctly states the number of split samples, sampling locations, and mass requirements, should be referenced.	Windward	In addition to deleting specific locations for USEPA split samples from Worksheet 18, CPG has removed language perceived as prescriptive from the following locations in the QAPP: • Executive summary page v, • Footnote 6 in WS 10, • Worksheet 11 in section on what types of data are needed Please note, however, that the number of split samples, sampling locations and mass requirements will need to be identified by USEPA and its oversight contractor soon as possible in order to ensure that sufficient sample is collected.

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4	The QAPP does not clearly list the appropriate quality control samples for the chemistry sediment samples and benthic tissue samples. a) Worksheet 20, Footnote D; Worksheet 12, Footnote E; Worksheet 28, Footnote C: Quality control samples, such as matrix duplicate (*e.g.*, laboratory replicate), field duplicate, and matrix spike/matrix spike duplicates (MS/MSD), should not be compromised due to limited mass. Additional mass should be collected to ensure that these quality control samples will be collected. b) Worksheet 20: One field duplicate is required for tissue samples since 20 samples are anticipated to be collected. c) Worksheets 12 and 28 do not reflect the appropriate criteria established in the EPA Methods (see specific comments below). d) Worksheets 12 and 28 do mention Certified Reference Material (CRM); however, they do not discuss the source of these performance criteria. The QAPP did not address Response-to-Comments 11, 58, and 78, which requests that a National Institute of Standards and Technology (NIST) or National Research Council (NRC) sample be included. Moreover, the performance criteria for precision and accuracy are unclear (see specific comments below). e)The response to Comment 73 should be re-visited. The commenter noted that a separate MS/MSD jar was not required. Worksheet 20 should be revised to state clearly although a separate jar may not be needed, MS/MSD samples and other quality control samples will still be analyzed.	Windward	a) The text that stated that matrix QC may be omitted if sample mass was limited was removed from Worksheet 20, footnote d; Worksheet 12, footnote e; and Worksheet 28, footnote c. b) As consistent with the Fish/Decapod QAPP, field duplicates are not appropriate for tissue samples. Matrix duplicates are proposed splits of homogenized tissue for composite samples. Field and matrix duplicates are consistent with the discussion between GPG and the USEPA QA Officer on July 16, 2009. c) Worksheets 12 and 28 are consistent with the approved Fish/Decapod QAPP. Please remember that USEPA methods support a performance based method system (PBMS) for QA/QC to achieve effective data and are not intended to be prescriptive. In most cases, we have provided additional and more stringent QA/QC requirements than are indicated in the USEPA methods. The specific comments have been addressed below. d) Attachment Q provides the proposed certified reference materials (CRMs) for all analyses that require CRMs. There are high quality CRMs produced by other agencies than NRC and NIST, such as International Atomic Energy Association (IAEA) and Institute for Reference Materials and Measurements (IRMM), and ERA (Environmental Research Associates). Therefore, CPG has not required exclusive use of NIST and NRC CRMs. e) Worksheet 20 has been revised to include a column for matrix duplicates, matrix spikes, and matrix spike duplicates to provide additional clarity that these samples are required. Furthermore, footnote d in Worksheet 20 was revised to further specify that the matrix duplicate, matrix spike, and matrix spike duplicate aliquot will be taken from the same container and analyzed . The word "these samples" was replaced with the underlined text and footnote d now states "Additional containers will not be collected for matrix duplicate, matrix spike, and matrix spike duplicate samples, the aliquot for matrix duplicate, matrix spike, and matrix spike duplicate samples will be taken from the same container as the parent sample with the exception of VOCs and TPH-purgeables. Separate containers will be collected for matrix spike and matrix spike duplicate samples for VOC and TPH-purgeable analyses."

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5	Worksheet 2 (page 6) Item 5 "List dates of scoping sessions that were held": The list of dates provided for this line item is incomplete. For response to this QAPP line item, CPG should refer to Worksheet 9 only, or list all of the dates included in Worksheet 9.	Windward	The reference to Worksheet 9 in item 5 on page 6 in Worksheet 2 was deleted to be consistent with the Fish/Decapod QAPP. The scoping session was held January 14-15, 2009 as stated in the QAPP. Subsequent discussions held during calls between CPG and USEPA were for clarification and final decision making.
6	Worksheet 9 (page 39) Last bullet on Consensus Decisions: The summary of the EPA email on September 15, 2009 needs to be clarified. EPA agreed that press sieving and drying of sediments would not be necessary. However, sieving of sediments for the benthic taxonomy is still required.	Windward	The summary of USEPA's decision on press sieving all sediments has been revised to read, **"**In an e-mail sent September 15, 2009, Stephanie Vaughn of USEPA informed the CPG that press sieving all the sediments will not be required. Sediment sieving for benthic taxonomy sample collection will be conducted as described in the QAPP."
7	Worksheet 10 (page 45) Last sentence (beneath the numbered list): The decision statement on how and when to re-locate a sampling locations is not clearly stated.	Windward	The statement has been clarified to state, "If acceptable grab samples cannot be obtained at targeted sampling locations after five attempts following the procedures described in Attachment D , sampling locations may be re-located within 30 m of the target location."
8	Worksheet 11 (page 46) Second paragraph under "What will the data be used for": The QAPP states that "benthic toxicity results will be compared to regional background." This statement conflicts with the consensus decision on Worksheet 9 (page 33) - which states that EPA is willing to evaluate the CPG proposal on their regional background approach; however, EPA has not agreed to this approach. Consequently, language needs to be added to Worksheet 11 to note that a regional background approach is contingent on EPA approval.	Windward	The text has been revised to say benthic toxicity results will be compared to regional background pending USEPA approval.
9	Worksheet 11 (page 49) Top-indented paragraph: The QAPP states that "all invertebrates in the estuarine samples will be identified, and 300 invertebrates will be identified in the freshwater samples." The rationale for stopping at 300 invertebrates in the freshwater samples is not provided, especially since the QAPP states that all the estuarine invertebrates will be identified.	Windward	The QAPP has been revised in Worksheet 11 to include the reference for the USEPA protocol for use in fresh water. The manual is: Barbour et al., 1999. Rapid bioassessment protocols for use in streams and wadeable rivers: periphyton, benthic macroinvertebrates, and fish, Second edition. EPA 841-B-99-002. Office of Water, US Environmental Protection Agency, Washington, DC.

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10	Worksheet 11 (page 53) Third Paragraph; Worksheet 14 (page 127) Second Paragraph; and Attachment D: The QAPP states that a minimum of four sediment grab samples will be collected at each sampling location for compositing. Moreover, Worksheet 11 states that for human health exposure sampling locations, grabs will be taken until sufficient sediment is obtained. However, a consensus decision from the August 12 conference call was three sediment grabs per composite (refer to Worksheet 9, page 36).	Windward	For clarification, per USEPA's request, 4 replicate samples will be collected for benthic taxonomy. Each replicate is from one grab sample with a portion of the grab going to the homogenized sample for chemistry, toxicity, and bioaccumulation (for the 20 bioaccumulation stations). After further evaluation of sediment volume requirements, sediment composites will be composed of 2 to 7 grabs depending on the volume of sediment required from each station. the grab samples will be thoroughly homogenized prior to distributing them to sample containers for chemistry, toxicity or bioaccumulation testing. The QAPP has been revised for human health exposure sampling locations to say that a minimum of three grab samples will be composited. No change was made in Worksheet 14 or Attachment D.
11	Worksheet 12 (general comment on worksheet): Laboratories should be required to analyze laboratory duplicates (either laboratory replicate or MSD) as a measure of laboratory precision. This general comment also applies to Worksheet 28.	Windward	Laboratories are required to analyze a laboratory duplicate (i.e. a matrix duplicate and/or matrix spike duplicate) as presented in Worksheet 12 and 28, which is consistent with the Fish/Decapod QAPP. Worksheet 20 has been revised to further clarify that these samples are required in addition to the field duplicates for sediments. The footnotes in Worksheets 12 and 28 that stated that matrix duplicate, matrix spikes, and matrix spike duplicates may be omitted if sample mass is limited were deleted.
12	Worksheet 12 (page 84-85) and Worksheet 28 (page 273) PCB congeners: The measurement performance criteria listed for PCB congeners should more closely reflect the requirements and technology provided in EPA Method 1668 A, Section 9.0. For example, it should include or reference requirements for surrogate recoveries and on-going precision and recovery standards per Method 1668A.	Windward	Worksheets 12 and 28 for PCB congeners are consistent with the approved Fish/Decapod QAPP. Under the PBMS for QA/QC, the laboratory has developed more stringent and additional quality control parameters than what is stated in USEPA Method 1668A. For example, the batch control spike sample is similar to the on-going and precision and recovery sample (OPR), but is used at the beginning and end of the analytical batch rather than the only the beginning as with the OPR in Method 1668A. This allows for the assessment of accuracy, as well as precision within each analytical batch. The requirements for extraction standards, also referred to as surrogates, internal standards, and labeled internal standards are provided in Worksheets 12 and 28. No change was made to the QAPP.

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13	Worksheet 12 (page 87) PCDD/PCDFs: The measurement performance criteria listed for PCDD/PCDFs should more closely reflect the requirements and technology provided in EPA Method 1613B, Section 9.0.	Windward	Worksheets 12 and 28 for PCDDs/PCDFs are consistent with the approved Fish/Decapod QAPP. As similar to PCB congener analysis, under the PBMS for QA/QC, the laboratory has developed more stringent and additional quality control parameters than what is stated in USEPA Method 1613B. For example, the batch control spike sample is similar to the OPR, but is used at the beginning and end of the analytical batch rather than the only the beginning as required with the OPR in Method 1613B. This allows for the assessment of accuracy, as well as precision within each analytical batch. Extraction standards, also referred to as surrogates, internal standards, and labeled internal standards are provided in Worksheets 12 and 28. No change was made to the QAPP.
14	Worksheet 12 (page 88) PCDD/PCDFs: Language used to describe the CRM acceptance criteria for PCDD/PCDFs needs to be clarified. For example, the paragraph starting with the phrase "PD of certified target analytes should be within 25% consensus values ..." needs to be clarified.	Windward	The CRM requirements in Worksheets 12 and 28 for PCDDs/PCDFs were revised to clarify the acceptance criteria. The acceptance criteria is a percent difference of 25% compared to the reference values, when the reference value is within the calibration curve. The long term goals were deleted to eliminate confusion.
15	Worksheet 12 (page 88) and Worksheet 28 (page 278) PCDD/PCDFs: The CRM source for the PCDD/PCDFs needs to be provided along with rationale on how the consensus values were established. This comment also applies to Worksheet 28 and Response-to-Comment 11, which was not satisfactorily incorporated into the QAPP.	Windward	The source of the CRMs for PCDDs/PCDFs are provided in Attachment Q of the QAPP. The CRM certificate available from the manufacturer provides the detail on how the consensus values were established.
16	Worksheet 12 (page 94) and Worksheet 28 (page 285) Pesticides: The measurement performance criteria listed for pesticides should more closely reflect the requirements and technology provided in EPA Method 1699.	Windward	The required quality control samples presented in Worksheet 12 and 28 for organochlorine pesticides are consistent with USEPA Method 1699, and the overall acceptance criteria ranges are more stringent than what is presented in Table 6 of USEPA Method 1699. For example, the acceptance criteria for the surrogates (also known as the pre-extraction internal standards) have a range of 10-200% in the QAPP, whereas USEPA Method 1699 has a range of 5-200%. Furthermore, the acceptance criteria for the OPR sample (also known as the laboratory control sample [LCS]) is 50-200% in the QAPP, whereas USEPA Method 1699 provides an acceptance range of 5-200%. The acceptance ranges presented in the QAPP and in the USEPA Method 1699 are wide because pesticides are highly reactive compounds. Because of their reactivity it is more typical to have low recoveries rather than high recoveries for pesticides. The laboratory acceptance criteria are particularly more stringent on the low range as compared to criteria presented in

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			USEPA Method 1699 to address this. Under the PBMS QA/QC protocols, laboratories may modify the QA/QC protocols found in published methods and document them in their laboratories SOPs in order to produce more effective data. No change was made to the QAPP.
17	Worksheet 12 (page 94) Pesticides: SOPs M5, M6, and M7 that are attached to the QAPP are "Maxxam Analytics Technical Data Sheets" not standard operating procedures; consequently, they do not provide sufficient technical detail of the procedure. Moreover, Worksheet 12 references EPA Method 1699 modified (NYSDEC HRMS-2), but the associated Technical Data Sheets do not reference EPA Method 1699. In addition, a number of the measurement performance criteria listed for pesticides (such as ongoing precision and recovery sample and pre-extraction internal standard) also reference a standard operating procedure (SOP). These criteria are not provided in the Technical Data Sheets.	Windward	Maxxam Analytics has submitted technical bulletins rather than full SOPs because of proprietary information in their SOPs. If more extensive SOPs are needed, they may be obtained directly through Ewa Konieczna, the QA officer at Maxxam Analytics (Ewa.Konieczna@maxxamanalytics.com). During review of the Fish/Decapod QAPP, USEPA obtained the SOPs directly from Maxxam Analytics. These are the same SOPs that will be used for the Benthic QAPP.
18	Worksheet 14 (page 130) "Data Management Task": Electronic data deliverables are required to be submitted to EPA in Region 2 Multimedia Electronic Data Deliverable (MEDD) format. Discussion about data upload to PREmis should be removed from Worksheet 14 and replaced with a MEDD deliverable. Worksheet 14 should be consistent with Worksheet 18 (page 318) "Data Storage and Retrieval."	Windward	PREmis was deleted from Worksheet 14 and was replaced with a discussion of submitting Multimedia Electronic Data Deliverable (MEDD) to USEPA in Region 2 as requested. The text added was consistent with the text in Worksheet 29 in section "Data Storage and Retrieval" (please note Worksheet 18 does not include information on the MEDD deliverable). Worksheet 35 was also revised to include the MEDD deliverable.
19	Worksheet 15 (general comment): The Project Quality Limit Goals in most of the reference limit tables are set at the same values as the data quality level (DQLs). The Project Quality Limits should be set at least 3 to 10 times lower than the Action Levels.	Windward	As per the discussion with USEPA on October 1, 2009, Worksheet 15 was revised so that the project quantitation limit goals are the same as the method quantitation limits.
20	Worksheet 15 (general comment): The statement "Bold indicates chemicals where the achievable detection limits exceed the project quantitation limit goals" should be added to the footnotes for appropriate parameters.	Windward	The statement, "Bold indicates chemicals for which the achievable laboratory limits exceed the DQL" was added to Worksheet 15 where appropriate. Please note that the phrase "project quantitation limits" was replaced with "DQL" for in this statement because the project quantitation limits were changed from a value equal to the DQL to a value equal to the laboratory quantitation limits as in Comment 19.
21	Worksheet 15 (page 133): The laboratory achievable limits should be presented in the units used by the analytical method. The units currently presented in Worksheet 15 are in units of mg/kg [parts per million (ppm)] while data for PCB congeners generated by EPA Method 1668A are typically reported in ng/kg [parts per trillion (ppt)]. This comment also applies to the other Worksheet 15 parameters	Windward	Worksheet 15 is consistent with the Fish/Decapod QAPP, such that all units are presented in mg/kg. A note was added to all tables in Worksheet 15 that states that "project data will be reported in units appropriate to the analytical method" as per discussion with USEPA on October 1, 2009.

No.	Comment	Response	Discussion
	where the method units are not mg/kg.		
22	Worksheet 15 (page 142) Footnote A: The footnote should clearly state that EPA has not accepted the DQLs listed. This comment also applies to the other footnote regarding DQLs in the Worksheet 15 tables for the other parameters.	Windward	Footnote a in Worksheet 15 was revised to state that DQLs have not been approved by USEPA. All other footnotes in Worksheet 15 that mention DQLs have also been revised to state DQLs have not been approved by USEPA.
23	Worksheet 19 (page 237): Preservation of frozen sediment samples was established for the Lower Passaic River Restoration Project in the Malcolm Pirnie, Inc. QAPP Field Modification (dated October 10, 2005). CPG QAPP holding times for sediment samples in Worksheet 19 exceed the holding times previously accepted by EPA. CPG should provide justification for extending the holding times up to 1 year.	Windward	The PAH, alkylated PAH, organochlorine pesticide, and grain size holding times in Worksheet 19 were changed to be consistent with the Malcolm Pirnie, Inc. QAPP Field Modification (dated October 10, 2005). As consistent with the Malcolm Pirnie, Inc. QAPP Field Modification (dated October 10, 2005), the following text was added to Worksheet 19, footnote d to provide clarity regarding the holding times, " When frozen samples are allowed to thaw, the cumulative time the sample is removed from the freezer is considered the holding time at 0-4 °C."
24	Worksheet 20 (page 242) and footnote D (page 244): Tissue samples (resulting from bioaccumulation testing) require a duplicate sample and other laboratory controls.	Windward	Matrix duplicates are proposed splits of homogenized tissue for composite samples as discussed with USEPA on October 1, 2009. Worksheet 20 has been revised to include matrix duplicates, matrix spikes, and matrix spike duplicates for clarity.
25	Worksheet 28 (page 285) Pesticides: The laboratory control sample (LCS) recovery acceptance criteria of 50-200% should be tighter.	Windward	The required quality control samples presented in Worksheet 12 and 28 for organochlorine pesticides are consistent with USEPA Method 1699, and the overall acceptance criteria ranges are more stringent than what is presented in Table 6 of USEPA Method 1699. For example, the acceptance criteria for the surrogates (also known as the pre-extraction internal standards) have a range of 10-200% in the QAPP, whereas USEPA Method 1699 has a range of 5-200%. Furthermore, the acceptance criteria for the OPR sample (also known as the LCS) is 50-200% in the QAPP, whereas USEPA Method 1699 provides an acceptance range of 5-200%. The acceptance ranges presented in the QAPP and in the USEPA Method 1699 are wide because pesticides are highly reactive compounds. Because of their reactivity it is more typical to have low recoveries rather than high recoveries for pesticides. The laboratory acceptance criteria are particularly more stringent on the low range as compared to criteria presented in USEPA Method 1699 to address this. Under the PBMS QA/QC protocols, laboratories may modify the QA/QC protocols and acceptance ranges found in published methods and document them in their

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			laboratories SOPs in order to produce more effective data. No change was made to the QAPP.
26	Attachment K, Table 1 and Table 2: The footnotes indicate that Lowest Observable Adverse Effect Level (LOAEL) toxicity reference values (TRV) may have been used; however, there is no indication if LOAEL TRVs were used and, if so, how they were used [*e.g.,* extrapolated to a No Observable Adverse Effect Level (NOAEL) TRV].	Windward	The following footnote has been added to the text in Attachment K describing the derivation of DQLs: *Lowest-observed-apparent-effect levels (LOAELs) were only used in cases where no tissue-residue NOAELs were available.* "LOAEL" was deleted in footnote "e" in Table 2. Wildlife DQLs were based on NOAELs only. Please note that DQLs will be compared to thresholds presented in the PAR in a separate memorandum to ensure that selected TRVs are adequately conservative.
27	Attachment K, Table 1: A statement "Bold identifies the lowest ecological threshold that was selected as the DQL" should be added as a footnote.	Windward	The statement has been added to Attachment K, Table 1 as requested.
28	Attachment K, Table 2: Footnote F should indicate that the selected ecological DQL was based on the lower of the benthic invertebrate threshold, shorebird threshold, or New Jersey Department of Environmental Protection (NJDEP) screening criteria.	Windward	Footnote f in Attachment K, Table 2 has been revised as requested.
29	Attachment K, Table 2: Footnotes L and M indicate that the selected criteria were converted to parts per billion (ppb). These footnotes should be checked since all thresholds are reported in ppm.	Windward	Footnotes i and m in Attachment K, Table 2 were revised to state ppm rather than ppb. Please note footnote L does not mention concentration units.
30	Attachment K, Table 3: Clarification is needed on why the EPA regional screening level (RSL) for PCB congeners (high risk) was used as a default value for PCB congener 82, given that the other PCB congeners have a much lower RSL.	Windward	As stated in Worksheet 18 "DQLs for individual PCB congeners based on the total PCB DQL. For dioxin-like PCB congeners, DQL based on the lower of the total PCB DQL and the individual PCB congener DQL." Attachment K has been revised to only show DQLs for dioxin-like PCB congeners (PCB congener 82 has been deleted) and footnote "u" has been edited to clarify.
31	General Comment: While the CPG revised the Executive Summary and Introduction, not all the edits were incorporated throughout the QAPP (example Response-to-Comment 23). Worksheets need to be consistent with the Executive Summary and Introduction.	Windward	The information on surface water sampling was added to the executive summary and introduction per USEPA benthic QAPP previous Comment 23. As stated, it is scheduled for 2010 and will be used to support both human health and ecological risk assessments. The program is not discussed in the worksheets because it is for a future program still to be developed by CPG. No inconsistencies were found.
32	Response-to-Comments 9, 43, and 75: The revised SOP for Hyalella needs to be incorporated into the Revised Draft QAPP.	Windward	The revised *Hyalella* SOP is incorporated in the Benthic QAPP and has addressed USEPA comments.

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33	Response-to-Comments 10 and 60: The QAPP and responses to Comments 10 and 60 should be consistent with EPA e-mail dated September 15, 2009, regarding sieving	Windward	The following statement has been added to Comments 10 and 60 in the Response to Comment Table dated September 16, 2009, "Update to RTC (made on 9/29/09): USEPA agreed that press sieving of all sediments would not be required. Sieving of sediments to obtain samples for benthic community analysis will still be conducted."
34	Response-to-Comments 11, 58, and 78: The QAPP does not clearly describe the CRM that will be used as a quality control sample. More importantly, the QAPP does not clearly state that a NIST sample or NRC sample will be tested.	Windward	Worksheets 12 and 28 provide the acceptance criteria for the CRMs. Worksheet 20 has been revised to include CRMs, which demonstrates the frequency required given the total number of samples collected. Attachment Q provides the proposed CRMs for all analyses that require CRMs. There are high quality CRMs produced by other agencies than NRC and NIST, such as International Atomic Energy Association (IAEA) and Institute for Reference Materials and Measurements (IRMM), and ERA (Environmental Research Associates). Therefore, CPG has not required exclusive use of NIST and NRC CRMs.
35	Response-to-Comment 18E: Fine-grained sediments are defined as 60 percent "fines." The QAPP should define the physical diameter of the fine particle.		The QAPP was revised to include the definition of "fines" as the sum of silt and clay particles having a diameter of less than 63 µm based on the evaluation of historical grain-size data. the change was made in ES 5.
36	Response-to-Comment 28: The CPG response does not address the issue raised concerning the proposed taxonomists' familiarity with East Coast benthic fauna. This lack of familiarity could lead to greater use of higher taxonomic levels (*e.g.*, genera rather than species) and a reduction in the potential discriminatory values of the dataset than is necessary. If the subcontractor has a working knowledge classifying all the taxa species in Table 11-1, then this concern would be addressed.	Windward	The subcontractor has extensive experience in identification of invertebrates throughout the country. The subcontractor conducting the taxonomy has provided a list of projects documenting their experience and familiarity working with East Coast benthic fauna. The document is attached to this RTC.
37	Response-to-Comment 39: The hierarchy of polycyclic aromatic hydrocarbons (PAH) and metals is inverted in the CPG list compared to the recommended list in the EPA comment. Clarification should be provided.	Windward	The priority list was changed in Worksheet 10, such that PAH are above metals. Please note that this is inconsistent with crab and fish tissue priority list in the Fish/Decapod QAPP. In the Fish/Decapod QAPP metals are above PAHs.
38	Response-to-Comment 44: While homogenization is discussed in Worksheet 11 (page 53), the QAPP does not clearly address the EPA comment that "The surficial sediments that are used for chemical analysis and toxicity testing must be collected from each sampling location, homogenized, and split to support the various chemical and toxicological evaluations."	Windward	The QAPP has been revised in Worksheet 11 to say, "A portion of each of four grab samples will be allocated for benthic community analysis (0.1 m^2 for estuarine samples and 0.5 m^2 for freshwater samples). The four benthic community allocations will be kept separate to provide four replicates per location. Additional grab samples needed to provide sufficient sediment for sediment

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			chemistry analysis and toxicity and bioaccumulation testing (for the 20 bioaccumulation stations) will be transferred into containers that have Teflon® liners for transport to the field facility, where they will be transferred to a stainless steel container, thoroughly homogenized, and apportioned into sample containers for chemistry analysis, toxicity testing, or bioaccumulation testing."
39	Response-to-Comment 48: The CPG response and proposed language does not address the comment for providing rationale on the number of samples.	Windward	The rationale for the number and location of samples is provided in Worksheet 11 in Section Where, when, and how should the data be collected/generated?
40	Response-to-Comment 52B: Sediment samples for acid-volatile sulfides (AVS) need to be collected along with volatile organic compounds (VOC) before the sediment sample is homogenized. (Refer to CPG response to 52D – QAPP should be consistent.)	Windward	AVS/SEM analyses will be conducted on a sample that has not been homogenized. This is specified in footnote b in Worksheet 20 which states "Field duplicate will be collected at a rate of one per 20 samples, and consist of a thoroughly homogenized sample collected from one location that has been split between two sets of containers and labeled as representing two separate sampling locations. Samples for VOC, AVS/SEM, ammonia, sulfide, and TPH-purgeable analyses will be collected as discrete, non-homogenized samples. Field duplicates for VOC, AVS/SEM, ammonia, sulfide, and TPH analyses will be collected from the same grab sample as the parent sample and will not be homogenized." No change to Worksheet 20 was made.
41	Response-to-Comment 53 and 68: The CPG response contradicts the consensus decision stated in Worksheet 9 (page 36) that three sediment grabs will be used per composite.	Windward	For clarification, composite samples will consist of a minimum of 3 grabs. However, per USEPA's request, 4 replicate samples will be collected for benthic taxonomy. Each replicate is from one grab sample. Additional grab samples will be collected and homogenized for chemistry, toxicity, and bioaccumulation (for the 20 bioaccumulation stations). The number will be determined by the volume of sediment required from each station. The QAPP has been revised for human health exposure sampling locations to say that a minimum of three grab samples will be composited. No change was made in Worksheet 14 or Attachment D.
42	Response-to-Comment 55: The response does not adequately explain the dissemination of information.	Windward	How will the data reported? section in Worksheet 11 has been modified as follows: "Daily updates of locations and sample collection progress will be communicated (e.g., telephone conversation, e-mail) to CPG and USEPA Project Managers and Project Coordinators. Data reports summarizing the toxicity test results, the invertebrate taxonomy results, and chemistry analysis results will be provided within 90 days after receipt of validated toxicity test, taxonomy, and

No.	Comment	Response	Discussion
			chemistry data. In addition, these reports will include a map that presents the final locations from the sampling effort and summarize any modifications to the proposed sampling plan as outlined in this QAPP. An electronic database that includes the coordinates of sediment sampling locations and sediment sample characteristics will be provided. The electronic database will be provided at the end of the sampling effort. Preliminary data will be available upon request. A data report summarizing the tissue chemistry results from bioaccumulation testing will be provided 90 days after receipt of validated tissue chemistry data.
43	Response-to-Comment 56: The QAPP discusses quality controls on toxicity testing; however, only negative controls are addressed in Worksheet 11, not positive controls. Language under "How good do the data need to be" has to be consistent with the "action items" discussed on the August 12 conference call (refer to Worksheet 9, page 35, 6th bullet) and include positive controls.	Windward	The following sentence was added to Worksheet 11, "Positive controls will be used to evaluate the sensitivity of the organisms used in the tests compared with other laboratories and will not be used to determine test acceptability."
44	Response-to-Comment 62: The CPG response is unclear on explaining when the comparison of detection limits to sediment and tissue thresholds in the PAR would be conducted and how the outcome of this analysis could potentially affect the upcoming sampling event.	Windward	The comparison of detection limits to sediment and tissue thresholds in the PAR is included in a memo that will be provided to USEPA, as discussed in Comment 1, in a couple weeks. The outcome of the discussion does not affect the upcoming sampling event because we are already achieving the lowest detection limits available. In a call on October 1, 2009, USEPA agreed that sampling could go forward without review of the comparison.
45	Response-to-Comment 64: Units are not provided for Table 1 in Attachment K.	Windward	Units in Table 1 in Attachment K are provided in the column heading "Ecological Tissue Thresholds (mg/kg ww)"
46	Response-to-Comment 66: The QAPP still does not provide enough specifics to independently verify the calculations of the shorebird DQL.	Windward	The calculation of the shorebird DQL will be provided in the memo comparing TRVs to the PAR as discussed in our response to Comment 44. The outcome of the discussion does not affect the upcoming sampling event because we are already achieving the lowest detection limits available. In a call on October 1, 2009, USEPA agreed that sampling could go forward without review of the comparison.

No.	Comment	Response	Discussion
47	Response-to-Comment 68: The CPG response does not address the concern on Attachment J – "While Attachment J describes the use of previous low resolution core data to aid in the selection of bioaccumulation sample locations, if historic data sets were used to help determine other sample locations, the process should be described in this worksheet."	Windward	Attachment J was provided to describe how bioaccumulation stations were selected. No historic data sets were used to determine the remainder of the sample locations. The process for selection of the remaining sites is described in Worksheet 11, as discussed in our response to Comment 39.
48	Response-to-Comment 72B: The CPG did not add clarifying text to address this comment. *Comment 72b – Worksheet 19: The footnote indicates that smaller sample sizes may be analyzed resulting in higher reporting limits and detection limits. Our preference would be to achieve the target reporting limits and detection limits on the priority analyte groups. Generating data on the complete list of analytes that is unusable in the BERA because the detection limits are too high is not useful.*	Windward	The sentence **"**Smaller sample sizes may be analyzed resulting in higher reporting limits and detection limits." was deleted from Worksheet 19, footnote a.
49	Response-to-Comment 80: The term "spot check" was not defined in the QAPP in Worksheet 34. Worksheets 34 and 35 need to be consistent.	Windward	The text in Worksheet 34 was revised to be consistent with the text in Worksheet 35, and the term "spot check" was removed.
50	Response-to-Comment 87: (similar to Response-to-Comment 62) The suggestions regarding methylmercury, Total PCB, PCDD, and DDE were provided in response to the CPG contention that the values provided in the draft QAPP were sufficiently conservative to fall below whatever TRV values were ultimately selected. As suggested in the comment on the draft, the identified DQLs do not appear to be universally conservative. Although in many cases the proposed method detection limits (MDLs) are low enough to minimize this concern, it would be helpful to have a thorough review of all proposed DQLs against available literature information, so that the project team can be more comfortable that appropriate analytical methods have been selected. This evaluation could obviously be limited to those chemical classes where the analytical method with the lowest available analytical detection capabilities has not been proposed.	Windward	This discussion will be provided in the TRV memo outlined in the Problem Formulation Document and will be delivered according to the schedule that will be prepared per Comment 1. The methods selected for the project use the lowest available analytical detection limits. In order to decrease detection limits further we would need to analyze a larger extraction mass which increases the likelihood of E-qualified data. In addition, historically in this river system methylmercury, total PCB, PCDD and DDE are almost always detected and those few samples where concentrations are low will not be the ones driving the risk decisions. In a call on October 1, 2009, USEPA agreed that sampling could go forward without this review.

Errata for the *Quality Assurance Quality Assurance Project Plan, Surface Sediment Chemical Analyses and Benthic Invertebrate Toxicity and Bioaccumulation Testing, Draft,* September 16, 2009

Errata Item	Section	Description
1	Worksheet 15	The achievable laboratory MDL for total Kjeldahl nitrogen, TOC, and total sulfide were revised in Worksheet 15 to be consistent with the laboratories most recent MDL studies. The laboratory quantitation limit for TOC in Worksheet 15 was also changed to be consistent with the most recent MDL study.
2	Worksheet 12	A field duplicate was added to the grain size table in Worksheet 12.
3	Worksheet 19	Containers were revised in Worksheet 19 to reflect container availability and to further reduce the number of sample containers required.
4	Worksheet 19	The preservation and holding time requirements for butyltins, metals, and PCB congeners, and PCDD/PCDF in sediments were revised to include those for samples held refrigerated (0 – 6°C) in Worksheet 19.
5	Worksheet 19	The minimum sample size for VOC in sediments was changed from 4, x 10 g to 4 x 5 g in Worksheet 19 as requested by the laboratory. The phrase “in the laboratory for” was deleted from the 48 hours to freezing the deionized water vials, so that vials can be frozen at the field facility when necessary.
6	Worksheet 11	Corrected tense for the word “damaged” in second line of page 49….”if one of the three replicates is damaged or lost.”
7	Worksheet 11	Revised Worksheet 11 to remove any mention of homogenization of sediment on the boat. Homogenization will be conducted in the field facility per agreement between CPG and USEPA.
8	Worksheet 11	Third paragraph. Changed PCs congeners to PCB congeners.
9	Worksheet 35	Performance Test (PT) samples were removed from this Worksheet 35 because we are using CRMs rather than PT samples.
10	Worksheet 12, 20, 28	The requirement for the certified reference material for alkylated PAHs was deleted because only CRMs for the parent PAHs are available and the laboratory is only conducting the alkylated PAH analysis. The requirement for CRMs for SVOCs in tissues were removed, because no CRMs are available with concentrations high enough for detection with full a SVOC scan under USEPA Method SW-846 8270.
11	Worksheet 11	Added questions mark (?) after “What will the data be used for” in How “good” to the data need to be section.
12	Executive Summary,	When referring to the 27 SQT stations place for co-location with mummichog and darter/killifish sampling, the sentence, “The sediment sampling at these stations will not occur simultaneously with the fish effort but will be performed as part of the sediment sampling effort outlined in this QAPP” has been changed to read, “The sediment sampling at these locations will be coordinated with the fish tissue collection effort.”